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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,408	04/08/2005	John Mak	100325.0198US	9198
34284	7590	09/18/2008		
Rutan & Tucker, LLP. 611 ANTON BLVD SUITE 1400 COSTA MESA, CA 92626			EXAMINER WU, IVES J	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 09/18/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/511,408

Applicant(s)

MAK, JOHN

Examiner

IVES WU

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

(1). Applicant's Request-for-Continued Examination (RCEX), Amendments and Remarks filed on 07/30/2008 have been received.

Claims 1 and 12 are amended.

The 112 2nd rejections of claims 1 and 12 in prior Office Action dated 4/30/2008 is withdrawn in view of the current Remarks, Amendments.

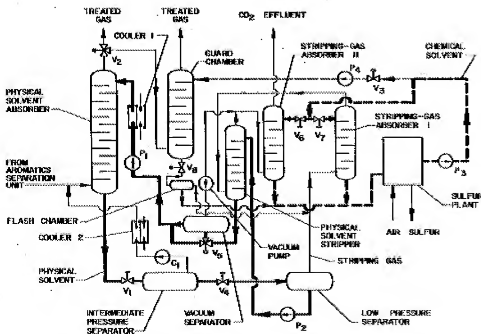
The rejections of claims 12-16 is introduced in the following.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(2). **Claims 12, 15-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US04080424) website: www.environmental-expert.com and Cabbage (US03301778).

Miller et al (US04080424) disclose process for acid gas removal from gaseous mixture (Title) as shown in the following:



Intermediate pressure separator and low pressure separator which is coupled to the physical solvent stripper through stripping gas absorber 1 and provides stripping gas as illustrated in the Figure above. The intermediate pressure separator liquid output containing the physically absorbed CO₂ and H₂S is then passed through valve V₄ to a low pressure separator reducing the pressure to approximately atmospheric to produce stripping gas for use in stripping gas absorber 1. **The low pressure separator vapor output contains nearly all of the CO₂ and most of the H₂S physically absorbed by the physical solvent.** Stripping gas absorber 1 removes H₂S from the CO₂ stripping gas by use of an H₂S selective chemical solvent (Col. 5, line 17-27).

As to step of separating in at least one of a high-pressure flash vessel and a medium pressure flash vessel a substantially hydrogen sulfide-free stripping gas from a physical solvent in a method of producing an ultra-clean physical solvent in **independent claim 12**, Miller et al (US04080424) disclose intermediate pressure separator and low pressure separator to produce liquid output and stripping gas containing nearly all of the CO₂ and most of the H₂S physically absorbed by the physical solvent (Col. 5, line 6-27).

As to step of feeding the substantially hydrogen sulfide free stripping gas into a vacuum stripper hydrogen sulfide to thereby strip hydrogen sulfide from a carbon dioxide-depleted lean hydrogen sulfide-containing physical solvent in the vacuum stripper to so form the ultra-lean physical solvent in a method of producing an ultra-clean physical solvent in **independent claim 12**, Miller et al (US04080424) disclose the gaseous output from the stripping gas absorber 1, mainly CO₂ free of H₂S, is used as a stripping gas to remove H₂S from low pressure separator liquid output which is passed in countercurrent flow relationship in the physical solvent stripper (Col. 5, line 28-32).

As to lean hydrogen sulfide-containing physical solvent selection in **claim 15**, Miller et al (US04080424) disclose specific chemicals which are especially useful as physical solvents include propylene carbonate, dimethyl ether of polyethylene glycol; n-methyl-2 pyrrolidone (Col. 4, line 16-29).

As to substantially hydrogen sulfide-free stripping gas comprising at least 95 mol% carbon dioxide in **claim 16**, Miller et al (US04080424) disclose the gaseous output from the stripping gas absorber 1, mainly CO₂ free of H₂S, to be used as stripping gas to remove the H₂S

from low pressure separator liquid output which is passed in countercurrent flow relationship in the physical solvent stripper (Col. 5, line 28-32).

(3). **Claims 13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US04080424) in view of Mak et al (US07192468).

As to step of feeding the ultra-clean physical solvent to an absorber in **claim 13**, Miller et al (US04080424) disclose gas input from aromatic separation unit to the physical solvent absorber as shown in Figure above. A portion of the liquid output of the physical solvent stripper controlled by valve V5 may be passed through the vacuum separator, thereby further reducing the CO₂ content of the physical solvent stream to about 1 mole percent – ultra-lean physical solvent (Col. 5, line 32-38).

As to step of operating with an isothermal gradient or with a decreasing top-to-bottom thermal gradient in **claim 13**, Miller et al (US04080424) disclose the physical solvent absorber as shown in Figure above. To minimize the rate of physical solvent circulation, it is desirable to introduce the regenerated physical solvent into the top of the physical solvent absorber at as low a temperature as practical (Col. 4, line 38-41). When the gas is the product of coal gasification the pressure in the physical solvent absorber **may be** at about 800 to 1200 psia and the temperature of the gaseous stream input to the physical solvent absorber at about 60 to 120° F. Any configuration of gas-liquid contact chamber is suitable, desirably one exhibiting a low pressure drop and high volume flow through such chamber (Col. 3, line 54-55). Miller et al **do not teach** the absorber to be configured to operate with an isothermal gradient or with a decreasing top-to-bottom thermal gradient as claimed.

However, Mak et al (US07192468B2) **teach** the configurations and method for improved gas removal (Title). Cool and dehydrate feed gas (Col. 2, line 41-47). Furthermore, operation of the absorber bottom at a lower temperature will allow operation of the absorber at a reduced solvent circulation (Col. 6, line 58-60).

The advantage of to have lower temperature at bottom of the absorber is to reduce the solvent circulation, thus increasing efficiency (Col. 6, line 58-60).

Therefore, it would have been obvious at time of the invention to configure the absorber with decreasing temperature gradient disclosed by Mak for the absorber of Miller et al in order to attain the above-cited advantage.

As to feed gas comprising at least 10 mol% carbon dioxide and at least 500 ppm hydrogen sulfide in **claim 14**, Miller et al (US04080424) disclose the gas input of 15 to 40 mol% CO₂ wherein the CO₂ over the H₂S is 25 to 50 to a product stream (Col. 2, line 51-54).

As to feed gas at pressure at least 1000 psig in **claim 14**, Miller et al (US04080424) disclose the gas input at pressure of 800 to 1200 psia (Col. 3, line 53).

Allowable Subject Matter

- (4). **Claims 1-11** are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The respective conduits to the vacuum stripper from high pressure flash vessel and medium pressure flash vessel overcomes the configuration of flash vessels disclosed in the prior arts, where the conduit of high pressure flash tank in prior arts is connected to previous absorber instead.

Response to Arguments

- (5). Applicant's arguments filed on 7/30/2008 have been fully considered but they are not persuasive.

Applicant points out that claimed intermediate flash vessel can not be an atmospheric flash tank since the flashed solvent from applicant's intermediate pressure flash vessel is further flashed in multiple successive steps (see e.g., Figure 2, elements 113, 115 and 117). Because Applicant does not provide the range of high pressure and medium pressure in Specification, therefore, the intermediate pressure vessel and low pressure flash vessel of Miller et al (US04080424) still reads on the limitations of instant claim. Although there is a successive flash step after the medium pressure flash separator disclosed in Applicant's Specification, it is not presented in the instant claim. Furthermore, the low pressure flash tank of prior art Miller et al (US04080424) is operated to reduce the pressure to approximately atmospheric, it still can be above the atmospheric pressure.

Applicant is reminded that claims define what Applicant regards as their invention. Limitations appearing in the Specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu

Art Unit: 1797

Date: September 16, 2008

/Jason M. Greene/
Primary Examiner, Art Unit 1797
9/16/08